

IN THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of the claims in the application:

1-103. (Cancelled)

104. (New) A process for forming an article comprising silicon carbide, comprising the steps of:

shaping a component, the component comprising a thermoplastic preceramic polymer material;

cross-linking the thermoplastic preceramic polymer to form a thermoset preceramic polymer; and

pyrolyzing the thermoset preceramic polymer to form a ceramic material.

105. (New) The process of claim 104, further comprising applying the thermoplastic preceramic polymer to a ceramic fiber material.

106. (New) The process of claim 105, wherein the applying step comprises applying the preceramic polymer to a ceramic fiber material selected from the group consisting of: monofilament, tow, mat and woven material.

107. (New) The process of claim 105, wherein the applying step comprises passing the ceramic fiber material through a solution of the preceramic polymer.

108. (New) The process of claim 105, wherein the shaping step comprises pressing the thermoplastic preceramic polymer with a compaction roller.

109. (New) The process of claim 104, wherein the cross-linking step comprises exposing the thermoplastic preceramic polymer to radiation.

110. (New) The process of claim 109, wherein the radiation in the exposing step comprises UV light.

111. (New) The process of claim 109, wherein the radiation in the exposing step comprises infrared light.

112. (New) The process of claim 104, wherein the cross-linking step comprises heating the thermoplastic preceramic polymer.

113. (New) The process of claim 104, wherein the cross-linking step comprises exposing the thermoplastic preceramic polymer to ammonia.

114. (New) The process of claim 104, further comprising heat-treating the component after the pyrolyzing step.

115. (New) The process of claim 104, wherein the thermoplastic preceramic polymer comprises a poly(ethynyl)carbosilane, and the ceramic formed in the pyrolyzing step comprises a silicon carbide material.

116. (New) The process of claim 104, wherein the thermoplastic preceramic polymer comprises a poly(ethynyl)silazane, and the ceramic formed in the pyrolyzing step comprises a silicon nitride material.

117. (New) The process of claim 104, wherein the ceramic formed in the pyrolyzing step comprises a material selected from the group consisting of: titanium carbide, boron carbide, lithium alumino-silicate, aluminum nitride, and aluminum oxide.

118. (New) The process of claim 104, wherein the shaping step further comprises applying the component to a shaped mandrel.

119. (New) The process of claim 104, wherein the shaping step further comprises shaping the component as matted fibrils in a corrugated cylindrical geometry.

120. (New) The process of claim 104, further comprising forming a plurality of fibers comprising the thermoplastic preceramic polymer.

121. (New) The process of claim 120, wherein the plurality of fibers are formed by melt-spinning the thermoplastic preceramic polymer.

122. (New) The process of claim 120, wherein the shaping step comprises arranging the plurality of fibers to form the component.

123. (New) The process of claim 120, wherein the shaping step comprises arranging the plurality of fibers to form the component configured as a filtration media.

124. (New) The process of claim 104, further comprising forming the thermoplastic preceramic polymer by reacting sodium acetylide with organochlorosilanes in order to generate an organo(ethynyl)chlorosilane product, and condensing said organo(ethynyl)chlorosilane product with an excess of an alkali metal.

124. (New) The process of claim 104, further comprising forming the thermoplastic preceramic polymer by reacting a sub-stoichiometric amount of an alkali metal with organochlorosilanes, and reacting the partially polymerized polyorganochlorosilane with sodium acetylide.

125. (New) The process of claim 104, further comprising forming the thermoplastic preceramic polymer by polymerizing a organo(ethynyl)chlorosilane product with ammonia, wherein the organo(ethynyl)chlorosilane is prepared by reacting sodium acetylide with organochlorosilanes.